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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/075,333	02/14/2002	Yonglin Huang	15436249251	8697
22913	7590	06/02/2005	EXAMINER	
WORKMAN NYDEGGER (F/K/A WORKMAN NYDEGGER & SEELEY) 60 EAST SOUTH TEMPLE 1000 EAGLE GATE TOWER SALT LAKE CITY, UT 84111			KANG, JULIANA K	
			ART UNIT	PAPER NUMBER
			2874	

DATE MAILED: 06/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/075,333

Applicant(s)

HUANG ET AL.

Examiner

Juliana K. Kang

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 March 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6,8,10-36,48-53,63 and 64 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6,8,10-36,48-53,63 and 64 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

1. Applicant's communication filed on March 10, 2005 has been carefully studied by the Examiner. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, this action is made final.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. **Claims 1-4, 6, 11, 12, 22-24, 31, 32, 63 and 64 are rejected under 35 U.S.C. 102(e) as being anticipated by Li et al (U.S. Patent 6,493,140 B1).**

Regarding claims 1, 31, 32, 48, and 49, Li et al disclose an optical device comprising a first fiber coupling (234) optically coupled to a fiber (236), wherein the fiber is configured to propagate a beam of light; a beam splitter/combiner (232) optically coupled to the first fiber coupling, wherein the beam splitter/combiner is configured to split the beam of light into a first component of light and a second component of light having different polarization states or to combine the first component of light and the second component of light into the beam of light; an isolator optically coupled to the beam splitter/combiner; and a second fiber coupling (252) and optically coupled to a first

Art Unit: 2874

additional fiber (254) and a second additional fiber (256), wherein the first additional fiber is configured to propagate the first component of light and the second additional fiber is configured to propagate the second component of light (see Fig. 6 and column 6 lines 40-65 and column 7 lines 8-11). Li et al further teach including an isolator (258, see column 7 line 8) which can be positioned on either side of the birefringent element (248, see column 6 line 66 to column 7 line 1) and positioning the isolator on the left side of the birefringent element (248, see Fig.6) provides the isolator that are disposed adjacent to the beam splitter/combiner.

Regarding claims 2 and 6, Li et al's first fiber coupling comprising a GRIN lens (240). GRIN lenses collimate/focus a beam of light.

Regarding claims 3 and 4, Li et al disclose polishing the fiber end at an angle (see column 4 lines 53-58).

Regarding claims 11 and 12, Li et al disclose the first component of p-polarized and the second component of s-polarized beams.

Regarding claims 22-24, Li et al disclose the second fiber coupling comprising a second GRIN lens (250) (see column 6 lines 58-65).

Regarding claims 63 and 64, Li et al show the claimed method for processing light in Fig. 6.

**4. Claim 51 is rejected under 35 U.S.C. 102(e) as being anticipated by Li et al (U.S. Patent 6,690,501 B2).**

Art Unit: 2874

Li et al disclose an optical beam combining device comprising a second fiber coupling configured to hold a second lens (20) and at least two fibers (12, 14); a beam combiner (24); a first fiber coupling configured to hold a first lens (30) and at least one additional optical fiber (34) and an isolator (36) is disposed between the beam combiner and the first lens (see Fig. 1).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 5, 25-30 and 33-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al (U.S. Patent 6,493,140 B1).**

Regarding claims 5 and 30, as described above, Li et al disclose the claimed invention including the polished fiber end at an angle to minimize the back reflections. However, Li et al do not teach having an AR coating at the fiber end. It is well known in the art to apply an AR coating at the end of fiber to minimize back reflections. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to apply an AR coating in Li et al for better coupling efficiency by further minimizing back reflections.

Regarding claims 25-27, Li et al do not specifically teach that the first additional and second additional fiber are single mode fibers, multimode fibers, or PM fibers. Since applicant does not provide the criticality of having any particular fibers, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use any type of well-known fibers such as single mode fibers, multimode fibers, or PM fibers in Li et al.

Regarding claims 28 and 29, Li et al show the first additional and second additional fiber ends that appear to be slanted at an angle. However, Li et al do not specifically state that they are polished at an angle. As described above, Li et al teach polishing the fiber (236) end at an angle to minimize back reflections. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to polish the first additional and second additional fiber ends at an angle to also minimize the back reflection.

Regarding claims 33-36, Li et al teach the use of the device in an optical communication systems, thus, use of the Lie et al's device as a passive device, coupling the device to a laser, using the device in an amplifier and an optical network would have been obvious to one having ordinary skill in the art.

**7. Claims 13-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al (U.S. Patent 6,493,140 B1) and further in view of Basting et al (U.S. Patent 6,515,741 B1).**

As described above, Li et al teach using an isolator in the beam combiner/splitter. However, Li et al do not teach the specifics of the isolator. As taught in Basting et al

Art Unit: 2874

using a Faraday isolator is well known in the art to allow a beam to pass in only in one direction (see column 3 lines 43-50). Thus, using a well-known Faraday isolator in Li et al would have been obvious to one having ordinary skill in the art. Since Li et al's device is a bi-directional, configuring the isolator to support the beam transmissions of both directions using any device including mechanical and electrical devices would have been obvious to one having ordinary skill in the art in order to provide isolation in both directions. Also having a specific isolation including about 30dB would have been obvious to one having ordinary skill in the art since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

**8. Claims 8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al (U.S. Patent 6,493,140 B1) and further in view of Seitz et al (U.S. Patent 6,222,627 B1).**

As described above Li et al disclose the claimed invention except the beam splitter/combiner comprising a prism. As taught in Seitz et al, using a prism comprised of two birefringent wedges aligned perpendicular to each other for a birefringent beam splitter and the birefringent beam combiner is known in the art (see column 1 lines 10-19). Since applicant does not provide the criticality of having any particular birefringent beam combiner/splitter, using any type of known birefringent beam combiner/splitter including a prism in Li et al would have been obvious to one having ordinary skill in the art to combine and split a beam.

Art Unit: 2874

**9. Claims 48-50 and 52-53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al (U.S. Patent 6,690,501 B2).**

As described above, Li et al ('501) teach a polarization beam combiner but is silent about a beam splitter. It is well known in the art to use a beam displacer that performs combining and splitting beams to support a light beam to travel in either directions. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use a beam splitter/combiner and change the direction of the isolator in Li et al in place of the beam combiner to make the device more versatile by supporting a light beam to travel in both directions.

### ***Response to Arguments***

10. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not



Art Unit: 2874

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kokkelink et al (U.S. Patent 6,430,323 B1) teach a polarization maintaining optical isolators. Swan (U.S. Patent 5,930,038) teaches optical isolator. Hellman et al (U.S. Patent 6,782,146 B2) teach a polarization combiner/splitter/isolator. JP 10-48572 teaches a polarization beam splitter using an isolator. Huang et al (U.S. Patent 6,628,461 B2), Huang et al (U.S. Patent 6,282,025 B1) and Kokkelink et al (U.S. Patent 6,529,325 B1) teach a polarization beam splitter/combiner.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juliana K. Kang whose telephone number is (571) 272-2348. The examiner can normally be reached on Mon. & Thur. 10:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rod Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2874

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
**JULIANA KANG**  
**PRIMARY EXAMINER**  
5/21/05